



# STATE OF IDAHO

DEPARTMENT OF HEALTH  
AND WELFARE

Attachment #6

DIVISION OF ENVIRONMENT  
Statehouse  
Boise, Idaho 83720

January 20, 1981

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IDAHO OPERATIONS OFFICE

MEMORANDUM

TO: Gordon Hopson  
THRU: Henry Moran  
FROM: Mike Smith  
SUBJECT: Final Effluent Limitations for Cyprus Mines, Inc.

The attached staff evaluation gives the final effluent limitations for Cyprus Mines, Inc. These effluent limitations are to be used as the basis for the Cyprus NPDES permit.

*MAS*

MAS:lab  
Attachment

cc: ✓ Grover Partee, w/attach.  
Larry Koenig, w/attach.

STAFF EVALUATION ON EFFLUENT LIMITATIONS FOR  
THE CYPRUS MINES CORPORATION, THOMPSON CREEK PROJECT  
(Custer County)

January 20, 1981

BACKGROUND

The Cyprus Mines Corporation, a wholly-owned subsidiary of Standard Oil Company (Indiana), is proposing to construct an open pit molybdenum mine and concentrator on Thompson Creek in Custer County 35 miles southwest of Challis. The project is scheduled to commence operation in 1983 with an annual production rate of 15-20 million pounds of molybdenum in the form molybdenum disulfide ( $\text{MoS}_2$ ).

The Thompson Creek Project will impact Upper Thompson Creek, Pat Hughes Creek, Buckskin Creek, Bruno Creek, and an un-named stream. None of these streams are designated stream segments, and, therefore, they have not been given specific designated uses in the water quality standards. However, Thompson Creek is known to be a steelhead spawning stream and its tributaries would provide beneficial aquatic life uses which support salmonid spawning and cold water biota. Water quality data collected on Thompson Creek by IDIHW and the U.S. Forest Service indicate the stream is of high quality.

DISCUSSION

In order to discharge to Thompson Creek and/or its tributaries, Cyprus must meet instream water quality standards and EPA effluent guidelines.

Instream Water Quality

The major water quality problems from mining and milling operations are usually associated with toxic heavy metals in tailings decant discharges and



mine drainage. Cyprus intends to recycle their tailings decant water which eliminates any problem of a tailings discharge. Also, the mine discharge from their open pit will be transported to the tailings pond and included in their recycle water. The only wastewater to be discharged from the mining operation will be runoff from the overburden and waste rock storage piles. This sediment laden water will be treated in sediment ponds and discharged to Buckskin and Pat Hughes Creeks.

In order to protect the tributary streams and Thompson Creek, the discharge should meet the present turbidity standards and should not discharge nuisance or objectionable suspended sediment concentrations which would impact protected beneficial uses. For turbidity the NPDES permit should quote the Idaho Water Quality Standards and Wastewater Treatment Requirements as follows:

1-2400.01(b) Turbidity - the wastewater must not increase the turbidity of the receiving water outside the mixing zone by:

- (1) More than five (5) NTU (Nephelometric Turbidity Units) over background turbidity, when background turbidity is fifty (50) NTU or less; or (1-30-80)
- (2) More than ten percent (10%) increase in turbidity when background turbidity is more than fifty (50) NTU, not to exceed a maximum increase of twenty-five (25) NTU. (1-30-80)

Cyprus has indicated in previous documents that their sediment ponds can achieve an effluent quality for suspended solids of 20 mg/l as a monthly average and 30 mg/l as a daily maximum. These limitations for Cyprus would adequately protect beneficial uses of the receiving water.

#### EPA Guidelines

New ore mining effluent guidelines are expected in January of 1981 and these should be included in the Cyprus permit.

### Special Resource Water

Although Thompson Creek and its tributaries are not special resource waters, the Salmon River which receives Thompson Creek is a special resource water, and the activities on Thompson Creek should not cause a measurable degradation of Salmon River water quality.

### RECOMMENDATIONS

- (1) The discharge from the Cyprus sediment ponds should meet the turbidity standard and should not contain high levels of suspended solids (see attached table).
- (2) The discharge from the Cyprus sediment ponds should be periodically monitored for total and dissolved heavy metals.
- (3) The groundwater on the Bruno Creek drainage above and below the tailings impoundment should be monitored on a quarterly or semi-annual basis to determine the loss of heavy metals from seepage.
- (4) Both water quality and biological monitoring should be conducted on Thompson Creek and the Salmon River above and below the mining operation to track the long term impact of the activity.



EFFLUENT LIMITATIONS FOR THE CYPRUS MINES CORPORATION'S  
SEDIMENT PONDS IN THE THOMPSON CREEK DRAINAGE

January 20, 1981

Parameter	Monthly Average		Weekly Average		Daily Maximum	
	Loading (lb/day)	Concentration (mg/l)	Loading (lb/day)	Concentration (mg/l)	Loading (lb/day)	Concentration (mg/l)
Suspended Solids	--	20	--	--	--	30
Turbidity -	the wastewater must not increase the turbidity of the receiving water outside the mixing zone by:					
(1)	More than five (5) NTU (Nephelometric Turbidity Units) over background turbidity, when background turbidity is fifty (50) NTU or less; or					
(2)	More than ten percent (10%) increase in turbidity when background turbidity is more than fifty (50) NTU, not to exceed a maximum increase of twenty-five (25) NTU.					